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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KYLE, MICHAEL J	
ART UNIT	PAPER NUMBER
3677	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/24/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/758,038	JEONG ET AL.	
	Examiner	Art Unit	
	Michael J. Kyle	3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10,11,13-15,17-25,27 and 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10,11,13-15,17-25,27 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 5 is objected to because it is unclear if the limitation "a second hinge portion" recited in the second paragraph is the same as the "a second hinge portion" recited in the first paragraph. As best understood, it is. Examiner suggests replacing "a" with --the-- or --said-- in the second paragraph.

2. Claim 8 is objected to because of the limitation that rotation is restricted "to a limited extent" in the last two lines of the claim. It is unclear precisely what range of motion is described by "to a limited extent". Description of this limitation could not be found in the specification.

3. Claim 10 is objected to because the limitation "the reinforcing member" in line 2, lacks antecedent basis. Additionally it is unclear of the limitation of "a stopping pin" is the stopping pin provided for in claim 8. As best understood, it is.

4. Claim 13 is objected to because of the limitation that rotation is restricted "to a limited extent" in the last two lines of the claim. It is unclear precisely what range of motion is described by "to a limited extent". Description of this limitation could not be found in the specification.

5. Claim 27 is objected to because it depends from claim 26, which has been canceled. Additionally the numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. Currently, there are two claims numbered "27". The second claim 27 will be referred to as claim 28 in this Office Action. Further, the limitation "the stopping pin of the reinforcing member" lacks

antecedent basis because the reinforcing member has not bee claimed as having a stopping pin. Claim 22 provides only that a stopping pin is located at the reinforcing member.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 3-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Heyder (U.S. Patent No. 5,483,756). Heyder discloses a hinge apparatus of a clothes drier drum comprising a front hinge portion (column 1, lines 66, 67), and a rear hinge portion (see figure 2) installed between the rear of a case (1) and a rear of a drum (8) such that the rear of the drum swings in vertical and horizontal directions. Heyder further shows the rear hinge portion to comprise a housing (10, 11) fixed at the center of the drum, a ball bearing (5) in the housing, and a shaft (3). The shaft (3) extends entirely through the ball bearing (see figure 2). A reinforcing member (2) having a flat board shape (at upper and lower ends in figure 2) and a convex shaped nut-installed portion that reinforces the stiffness of the case (1) when the shaft is engaged therewith. The reinforcing member (2) is mounted at the outer surface of the case (1). It is noted that the limitation "nut-installed" appears to be a process limitation in an article. There is no structure in claim associated with the process of being "nut installed".

8. With respect to claim 3, Heyder shows the housing includes first and second housings (11 and 10, respectively) fixed at the rear of the case (1). A spherical groove (around 5) is formed when the first and second housing are assembled.

9. With respect to claim 4, Heyder discloses the first housing (11) includes a first engaging portion (upper and lower portions of 11, near 13, in figure 2) with a bolt hole (shown in figure 2 between 12 and 13) fixed at the rear surface of the drum (8) and a bolt engaging hole bolt engaged with the second housing (at 12). The holes are formed in a circumferential direction. The first hinge portion (11) is integrally formed at the center of the first engaging portion and has a hemispherical groove where the ball (5) is inserted.

10. With respect to claim 5, Heyder discloses the second housing (10) comprises a second engaging portion (at 12) having a plurality of bolt holes which is bolt-engaged to the first engaging portion. A second hinge portion has a second hemispherical groove (receiving 5) in which the ball bearing is inserted and a penetrating hole through which the shaft passes.

11. With respect to claims 6 and 7, Heyder discloses one end of the shaft (3) fixed at the ball bearing (see figure 2), and the other end of the shaft has a spiral formed portion (threads) so as to be bolt engaged with the case (1) while providing an empty gap between the second housing and the case. A base nut (portion around shaft 3, between 4 and 5, in figure 2) is screw engaged with the shaft at an inner surface of the case (1).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 8, 10, 13-15, 17, 19-25, 27, and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Heyder in view of Wesson (U.S. Patent No. 763,821). With respect to claim 8, Heyder discloses a hinge apparatus of a clothes drier drum comprising a front hinge portion (column 1, lines 66, 67), and a rear hinge portion (see figure 2) installed between the rear of a case (1) and a rear of a drum (8) such that the rear of the drum swings in vertical and horizontal directions. Heyder further shows the rear hinge portion to comprise a housing (10, 11) fixed at the center of the drum, a ball bearing (5) in the housing, and a shaft (3). Heyder also discloses one end of the shaft (3) fixed at the ball bearing (see figure 3), and the other end of the shaft has a spiral formed portion (threads) so as to be bolt engaged with the case (1) while providing an empty gap between the second housing and the case. A base nut (portion around shaft 3, between 4 and 5, in figure 3) is screw engaged with the shaft at an inner surface of the case (1). The base nut is disc shaped and installed at a nut-installed portion at the case (1). Heyder does not show a plurality of protrusions around the outer circumference of the base nut to engage a stopping pin.

14. Wesson teaches a nut lock comprising a base nut (14) threadably engaged on a shaft (10). The base nut has a plurality of engaging protrusions (sides of 15) spaced from one another with a certain interval therebetween around the outer circumference for engagement with a stopping pin (16) to restrict rotation of the base nut member to a limited extent. This arrangement prevent the nut from rotating backwards on the bolt and loosening the connection. It would have been

obvious to one of ordinary skill in the art at the time of the invention to modify Heyder to include the nut lock arrangement of Wesson to prevent the nut from rotating backwards and loosening the connection. As modified, the pin 16 of Wesson would be fitted into the shaft 3 of Heyder, pass through the reinforcing member 2 and case 1 and engage the nut (14) of Wesson. The nut (14) of Wesson replaces the base nut shown by Heyder.

15. With respect to claim 10, Heyder discloses a reinforcing member (1) mounted at an outer surface of the case. As modified by Wesson, the stopping pin (16) is inserted in an insertion groove (13) formed in the case and is protruded to the nut-installed portion (area between 4 and 5) such that the stopping pin stops a stopping protrusion (sides of 15). In Wesson, it is shown that a stopping pin formed at one member (10) may pass through the groove (13) of another, intermediate member (12) to engage a protrusion (on sides of 15) of a nut (14). AS applied to Heyder, the pin 16 would be formed in the shaft 3, pass through the reinforcing member (2) and a groove in the case (1) to engage protrusions of base nut. It is noted that because the pin is present at a location where the reinforcing member is, it is considered to be formed at the reinforcing member.

16. With respect to claim 13, Heyder discloses a hinge apparatus comprising a housing (10, 11), a ball bearing (5), a shaft (3), and a shaft fixing unit (2 and portion around shaft 3, between 4 and 5, in figure 3). The shaft fixing unit comprises a base nut member (portion around shaft 3, between 4 and 5, in figure 3) screw engaged with the shaft installed an inner surface of a case (1) and a reinforcing member (2) mounted at an outer surface of the case (1). Heyder does not show a plurality of protrusions around the outer circumference of the base nut to engage a stopping pin.

17. Wesson teaches a nut lock comprising a base nut (14) threadably engaged on a shaft (10). The base nut has a plurality of engaging protrusions (sides of 15) spaced from one another with a certain interval therebetween around the outer circumference for engagement with a stopping pin (16) to restrict rotation of the base nut member to a limited extent. This arrangement prevents the nut from rotating backwards on the bolt and loosening the connection. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Heyder to include the nut lock arrangement of Wesson to prevent the nut from rotating backwards and loosening the connection. As modified, the pin 16 of Wesson would be fitted into the shaft 3 of Heyder, pass through the reinforcing member 2 and case 1 and engage the nut (14) of Wesson. The nut (14) of Wesson replaces the base nut shown by Heyder.

18. With respect to claims 14 and 15, the combination of Heyder and Wesson shows the base nut member to have a disc shape and is installed at a nut-installed portion formed at a center of the case. The stopping pin (16, of Wesson) is inserted in an insertion groove formed in the case and is protruded to the nut-installed portion (area between 4 and 5) such that the stopping pin stops an engaging protrusion (sides of 15). In Wesson, it is shown that a stopping pin formed at one member (10) may pass through the groove (13) of another, intermediate member (12) to engage a protrusion (on sides of 15) of a nut (14). As applied to Heyder, the pin 16 would be formed in the shaft 3, pass through the reinforcing member (2) and a groove in the case (1) to engage protrusions of base nut.

19. With respect to claim 17, Heyder discloses a housing (10, 11), a ball bearing (5), a shaft (3), and a shaft fixing unit (2 and portion around shaft 3, between 4 and 5, in figure 3). The shaft fixing unit comprises a base nut member (portion around shaft 3, between 4 and 5, in figure 3)

screw engaged with the shaft installed an inner surface of a case (1). Heyder does not show a plurality of protrusions around the outer circumference of the base nut to engage a stopping pin.

20. Wesson teaches a nut lock comprising a base nut (14) threadably engaged on a shaft (10). The base nut has a plurality of engaging protrusions (sides of 15) spaced from one another with a certain interval therebetween around the outer circumference for engagement with a stopping pin (16) to restrict rotation of the base nut member to a limited extent. This arrangement prevents the nut from rotating backwards on the bolt and loosening the connection. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Heyder to include the nut lock arrangement of Wesson to prevent the nut from rotating backwards and loosening the connection. As modified, the pin 16 of Wesson would be fitted into the shaft 3 of Heyder, pass through the reinforcing member 2 and case 1 and engage the nut (14) of Wesson. The nut (14) of Wesson replaces the base nut shown by Heyder.

21. With respect to claim 18, Heyder discloses a reinforcing member (2) at the outer surface of the case (1). The combination of Wesson and Heyder shows a stopping pin (16 of Wesson) formed at the reinforcing member (2 of Heyder). As combined, the pin 16 would be formed in the shaft 3, pass through the reinforcing member (2) and a groove in the case (1) to engage protrusions of base nut. It is noted that because the pin is present at a location where the reinforcing member is, it is considered to be formed at the reinforcing member.

22. With respect to claims 19 and 20, the combination of Heyder and Wesson shows the base nut member to have a disc shape and is installed at a nut-installed portion formed at a center of the case. The stopping pin (16 of Wesson) is inserted in an insertion groove (13) formed in the case and is protruded to the nut-installed portion (area between 4 and 5) such that the stopping

pin stops an engaging protrusion (sides of 15). In Wesson, it is shown that a stopping pin formed at one member (10) may pass through the groove (13) of another, intermediate member (12) to engage a protrusion (on sides of 15) of a nut (14). As applied to Heyder, the pin 16 would be formed in the shaft 3, pass through the reinforcing member (2) and a groove in the case (1) to engage protrusions of base nut.

23. With respect to claim 22, Heyder discloses a method of assembling a hinge comprising the steps of providing a first housing (11), second housing (10) and a shaft (3). Heyder further discloses fixing the first housing (11) to a rear center position of the drum (8) and inserting a ball bearing (5) into a first hinge portion of the first housing (portion of 11 receiving the ball 5) and coupling the second housing (10) to the first housing (11). Heyder further discloses coupling a shaft fixing member (2, and portion around shaft 3, between 4 and 5) to a spiral formed (threaded) section of the shaft and inserting the shaft into a case (1) to fix the shaft into the case. A nut (4) is coupled to an end of the shaft (3). Heyder does not show a stopping pin at the reinforcing member to stop the shaft fixing member.

24. Wesson teaches a nut lock comprising a shaft fixing (14) threadably engaged on a shaft (10). The shaft fixing unit has a plurality of engaging protrusions (sides of 15) spaced from one another with a certain interval therebetween around the outer circumference for engagement with a stopping pin (16) to restrict rotation of the base nut member to a limited extent. This arrangement prevents the shaft fixing unit from rotating backwards on the bolt and loosening the connection. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Heyder to include the nut lock arrangement of Wesson to prevent the shaft

fixing from rotating backwards and loosening the connection. As modified, the pin 16 of Wesson would be fitted into the shaft 3 of Heyder, pass through the reinforcing member 2 and case 1 and engage the nut (14) of Wesson. The nut (14) of Wesson replaces the base nut shown by Heyder. The stopping pin (16) is at the reinforcing member, and in an engaging groove at the case and engages the protrusions (sides of 15 in Wesson). Rotation of the shaft is prevented by the shaft fixing member.

25. With respect to claims 23 and 24, Heyder discloses that the steps of providing the first and second housings include a semi-sphere groove being formed in the first and second hinge portions, respectively (portion of 11 and 10 containing the ball 5).

26. With respect to claim 25, Heyder discloses a reinforcing member (2) coupled to an end portion of the shaft (3) from the outer side of the case.

27. With respect to claims 27 and 28, the combination of Heyder and Wesson shows the stopping pin (16 of Wesson) is curvedly extending from an outer circumferential surface of the reinforcing member. Wesson shows a curved stopping pin. The shaft fixing member is contacted with an inner surface of the case (1) and the reinforcing member (2) is contacted with an outer surface of the case (see figure 2).

28. Claims 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heyder in view of Wesson as applied to claims 8 and 18 above, and further in view of Crowley (U.S. Patent No. 5,963,432). In Heyder, it appears that the reinforcing member is fixed to the case by nut (4), not a weld or rivet as claimed.

29. Crowley teaches a fastening arrangement where a threaded rod and nut or a rivet may be used (column 4, lines 25-26), thus establishing equivalence between the two fasteners. It would have been obvious to one having ordinary skill in the art at the time of the invention to use a rivet to secure the reinforcing member to the case of Heyder, as a rivet is an equivalent fastening means.

Response to Arguments

30. Applicant's arguments with respect to all have been considered but are moot in view of the new ground(s) of rejection. Examiner has applied a different embodiment of Heyder in the rejections above. The embodiment shown in Heyder's figure 2 is now applied. In the new interpretation presented above, element 1 is considered as the case, and element 2 is considered as the reinforcing member. Additionally, newly found reference Wesson has been incorporated.

31. The restriction applied to claims 22-25, 27, and 28, has been withdrawn as a result of the amendment to claim 22.

Conclusion

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited to further show the state of the art with respect to ball joints and threaded fasteners: Miller, Morrow, Freeland, Shadley, Locotos, Hayakawa, Slesinski et al, Kincaid et al, WO 2005/064069, CA 2412296, and JP 2005-177513. It is noted that not all of the preceding references appear to qualify as valid prior art, but are cited nonetheless to show the state of the art.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Kyle whose telephone number is 571-272-7057. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann can be reached on 571-272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

35. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

mk

ROBERT J. SANDY
PRIMARY EXAMINER